CONTENT

SUMMARY

This book overviews quite a few issues of the spatial analysis advance in social and geographical research. The analysis of the definition of "space", its extension and improvement has been provided, the role and importance of the space domain in human life and society has been highlighted and emphasized. The features of the modern understanding of geographic space and chorological paradigm in geography have been examined.

It has been proposed to highlight in the geographical space the social and geographical and informational and social and geographical subspaces to unify and standardize the basic algorithms of the social and geographical analysis considering features of the subject-object domain of human geography.

The review of basic space-time epistemy of modern human geography have been provided. The concept "Social and geographical system" is de described which was validated by the authors in 2003. This concept combines social, natural and economic components of anthroposphere in one unique object. The further advances of the concepts "human-geographical process" and "social and geographical process" have been presented. This allows to specify and outline the object and subject of human (social) geography and to create conditions for reasonable application of the spatial and temporal analysis methods. The main theoretical approaches have been described in detail that comprehensively applied in modern human geography – geographical, system, synergetic, informational and historical ones. The basic features of their use in modern social and geographical studies have been depicted.

The geographical approach involves two aspects of social and geographical research: integrated and spatial ones. The first one is provided by applying a large amount of different statistical parameters concerning objects and implementing geographical integrative conceptual framewok. The second aspect is provided by the fact that the methodology of geography is based on modern chorological paradigm.

The systems approach supposes that the object of social and geographical research is examined as a large, complex, open, multilevel system (social and geographical system) operating in a certain environment and interacts with other systems . The term "system" in the book is identified by the set of properties. The application of the epistemological and ontological concepts of the system in social and geographical studies is analyzed. The processes of external and internal system adaptation, its monitoring and controllability, features of multisystem nature functioning have been examined in details.

It has been demonstared that the process of actogenes in the social and geographical system possesses general regularities, an executive system of the society is rebuilt cyclically due to continuing growth of the information society.

The synergetic approach is the key issue since it motivates to consider as many as possible number of operating factors and processes in order to cover as completely as possible the functional environment where the studied processes and phenomena occur. Social and geographical systems are heterogeneous and complex, combine different elements and subsystems, that is why the completeness of their review is reached by research of internal interactions from interdisciplinary positions, from various points of view, that corresponds to the requirements of the synergistic approach. It allows to obtain the holistic and unique picture of the interaction between components and subsystems of the social and geographical system and therefore - to track the process of development in general perspective, or focus on the most important details. Nonetheless the most important feature of the synergistic approach is that the system development is considered as a chain of successive phase transitions at the bifurcation points. At these points the external (and possibly, internal) conditions change in such a way that the system during its adaptation is forced to reorganize its structure and functions hence to change the trajectory of its development. Multiplicity of phase transitions supposes that the systems evolution is described by the nonlinear equations.

The informational approach involves the study of the information interchange peculiarities of the social and geographical system. It is very important because information is a universal substance that circulates in the connectiing channels of the

social and geographical system and provides mutual adaptation of the components and subsystems, system development and functioning as a whole entity. All processes in the social and geographical system are the result of the information exchange that is generated in the various geographical spheres - lithosphere, hydrosphere, atmosphere, biosphere and anthroposphere. Therefore, considering all environmental systems as social and geographical system components in their relationship and mutual conditionality should be emphasized that a lot of their properties and characteristics are determined by this interaction, which are characterized for all levels of generalization. The essence of the information criterion of the system evolution has been examined. The evolutionary potential of the system is defined by the deterministic and stochastic processes.

The historical approach allows investigating not only phenomena but also social and geographical processes in the terms of predicting their development. Possibilities of mutual determination of the various events and processes over time have been overviewed,. It has been accepted that past and future events mutually impact each other.

A brief review of the spatial analysis traditional methods in three-dimensional (physical) and multidimensional feature space has been provided The approximation methods parameter fields of social and geographical objects and research methods of spatial trends in the development of social and geographical process (trend analysis, geospatial data model as a single function of the space coordinates, the model of the field is based on local indicators) have been emphazied. Possibilities of computer technologies applications, including GIS-tools in modeling parameter fields of social and geographical objects at the conceptual level have been demonstrated Modeling in multidimensional feature space – cluster analysis and factor analysis has been overviewed in details .

New approaches and methods of spatial and temporal analysis have been described thoroughly in details, elaborated and approved by the department of social and economic geography and regional studies V.N. Karazin Kharkiv National University: the graphic and analytical method of multidimensial classification, graphic

and analytical method for estimating of the homogeneity social and geographical system development, applied informational analysis of the social and geographical system development.

The approximation method parameter fields of social and geographical objects based on the concept of the zone of influence has been proposed. The method enables the calculatino and construction by the integral function of exposure (IFE) the surface of the social and geographical objects interaction, divide it into spatial and attribute parts for the separate analysis. The advantages of the method IFV modeling in comparison with traditional methods of approximation field parameter have been demonstrated. The method has been illustrated by numerous examples.

A new method of the social and geographical systems development in normalized multidimensional space research– modeling of the trajectory of the social and geographical systems has been described. It has been depicted that the trajectory in vector form gives the possibility to analyze it by the vector analysis methods. It has been demonstrated that the trajectory of the social and geographical systems development may be characterized by two sets of parameters – angular and linear ones. Angular characteristics of this trajectory can perform a comparative analysis of consistency with other social and geographical systems with both optimal and average as well as with, project, trajectories. Linear features represent that dynamics of the social and geographical systems, which can be used for optimizing and managing on this process. It has been demonstrated in this book that the method of trajectory modeling of the social and geographical systems can be appliedfor organization and optimization of the social and geographical monitoring. Examples of the use of the method for implementing applied tasks concerning the development research of the social and geographical systems, which exist on their different hierarchical levels.